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(21) International Application Number: <b>PCT/US92/05799</b> (22) International Filing Date: <b>10 July 1992 (10.07.92)</b> (30) Priority data: <b>731,039                      16 July 1991 (16.07.91)                      US</b> (60) Parent Application or Grant (63) Related by Continuation <b>US    731,039 (CIP)</b> <b>Filed on    16 July 1991 (16.07.91)</b> (71) Applicant (for all designated States except US): <b>TRANS-MED BIOTECH INCORPORATED [US/US]; 120 South Linden Avenue, South San Francisco, CA 94080 (US).</b>		(72) Inventors; and (75) Inventors/Applicants (for US only) : <b>LEHNEN, Brian, C. [US/US]; 2640 Howard Avenue, San Carlos, CA 94070 (US). CROTHERS, Stephan, D. [US/US]; 3012 Ross Road, Palo Alto, CA 94303 (US).</b> (74) Agents: <b>RAE-VENTER, Barbara et al.; Cooley Godward Castro Huddleson &amp; Tatum, Five Palo Alto Square, 4th Floor, Palo Alto, CA 94306 (US).</b> (81) Designated States: <b>AU, CA, JP, NO, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE).</b>  <b>Published</b> <i>With international search report.</i>	
(54) Title: <b>METHODS AND COMPOSITIONS FOR SIMULTANEOUS ANALYSIS OF MULTIPLE ANALYTES</b>			
(57) Abstract <p>A method for detecting multiple analytes of interest in a sample employing a complementary binding moiety to each of said analytes bound to a solid support, wherein each analyte and its complementary binding moiety comprise first and second members of a specific binding pair (msbp) respectively is provided. The method includes the steps of forming a mixture of known proportions of multiple subpopulations of said complementary binding moieties, wherein each subpopulation comprises a different complementary binding moiety, contacting the sample with the mixture so that specific binding pairs are formed on the solid supports, and relating the presence of analytes of interest in the sample to the formation of specific binding pairs associated with each unique proportion of said multiple subpopulations by comparing the area of the peak in the fluorescence histogram to the total area of peaks in the histogram. The method can be performed with solid supports of a single average size and a single fluorochrome and without the need for using other detection systems (fluorescence FS &amp; SS).</p>			

METHODS AND COMPOSITIONS  
FOR SIMULTANEOUS ANALYSIS OF MULTIPLE ANALYTES

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and Blood Institutes CONTRACT NO1-HB-6-7020. The U.S. Government may  
5 have rights in this invention.

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of USSN 07/731,039 filed July  
16, 1991, which disclosure is incorporated herein by reference.

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INTRODUCTION

Technical Field

The present invention relates to a method and apparatus for use therein for  
the contiguous detection of multiple analytes in a biological sample using multiple  
15 complementary binding moieties. The invention is exemplified by the contiguous  
detection of human IgG, human chorionic gonadotropin and antibodies to  
recombinant HIV gp41, recombinant HIV p24, Hepatitis B core protein, and  
recombinant HTLV re-5.

20 Background

The in vitro diagnostics industry has been seeking technologies which  
afford the contiguous discrete detection of multiple analytes. As used in this  
application, the term "contiguous" refers to assays carried out both in the same  
space and at the same time, in contrast to the term "simultaneous", which refers to  
25 assays carried out at the same time, but not necessarily in the same space. As an  
example, chlamydia and gonorrhea infections often are coincident in women.  
Collecting a specimen can be problematic so that a single assay which can detect  
both disease agents contiguously is desirable. Another example is the current  
interest in the simultaneous detection of HIV-1 and HIV-2 antibodies in blood.